Image # AF/2855

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	)
	)
Johann Beller	) Art Unit: 2855
	)
Appln. No. : 09/884,955	) Ex: Harshad R. Patel
	)
Filed : June 21, 2001	) Attorney/Docket: BELL3001/FJD
	)

For: APPARATUS FOR GENERATING AND CONDUCTING A FLUID FLOW, SMF METHOD OF MONITORING SAID APPARATUS

BRIEF ON APPEAL (3 COPIES)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Transmitted herewith are three (3) copies of a Brief on Appeal in the above-identified application.

1. ( ) An Oral Hearing is requested.
2 ( ) An Oral Hearing is requested on _____.
3. ( ) An extension of time for filing the Brief on Appeal
   ( ) is hereby requested.
   ( ) was requested on _____.
4. ( ) A Verified Statement under 37 CFR 1.9 and 1.27
   ( ) is enclosed.
   ( ) is of record in this application.

The fee is calculated as follows:

	Large Entity	Small Entity	Amount
Filing Brief on Appeal	$330.00	$165.00	$330.00
Request for Oral Hearing	290.00	145.00	
Request for Extension of Time for Filing Brief			
( ) 1 month	110.00	55.00	
( ) 2 months	420.00	210.00	
( ) 3 months	950.00	475.00	
( ) 4 months	1,480.00	740.00	
( ) 5 months	2,010.00	1,005.00	

TOTAL DUE: $330.00

5. ( ) No fee required.

6. (X) A check in the amount of $330.00 is enclosed. (Check No. 39286)

7. ( ) Please charge Deposit Account No. 02-0200 in the amount of $_____. A duplicate of this sheet is enclosed.

8. (X) The Commissioner is hereby authorized to charge payment of the following fees during the pendency of this application or credit any overpayment to Deposit Account No. 02-0200 .

   ( ) Any patent application processing fees under 37 CFR 1.17.

   ( ) The Issue Fee set in 37 CFR 1.18 at or before mailing of the Notice of Allowance, pursuant to 37 CFR 1.311(b).

   ( ) Any filing fees under 37 CFR 1.16 for presentation of extra claims.

Respectfully submitted,

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March 15, 2004

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

In re Application of	)
	)
Johann BELLER et al	) Art Unit: 2855
	)
Appln. No. : 09/884,955	) Ex: T. Miller
	)
Filed : June 21, 2001	)
	)
For : APPARATUS FOR GENERATING AND CONDUCTING A FLUID FLOW, AND METHOD OF MONITORING SAID APPARATUS	)

BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313 - 1450

Sir:

Pursuant to the provisions of 37 CFR 1.192, submitted herewith is Applicant/Appellants' Brief on Appeal.

REAL PARTY IN INTEREST

The real party in interest, that is the party that holds the entire right, title and interest in this application is Endress + Hauser (DE) Holding GmbH of Haupstrasse 1, D-79689 Maulburg, Germany, as employer of the Applicant/Appellants.

RELATED APPEALS AND INTERFERENCES

No appeal or interference is pending in any related application.

STATUS OF CLAIMS

Claims 19 - 34 and 37 - 39 are withdrawn from further consideration as non-elected claims.

Claims 1 - 18, 35, 36 and 40 - 44 were elected and were examined. These claims were finally rejected in the Office Action of August 14, 2003

STATUS OF AMENDMENTS

A final rejection was issued in the Office Action of August 14, 2003 which indicated that claims 1 - 18, 35, 36 and 40 - 44 were finally rejected. A REQUEST FOR RECONSIDERATION WITH AMENDMENT was filed on December 15, 2003 to amend claim 42 only. A Notice of Appeal was also filed on December 15, 2003. An Advisory Action was issued on March 4, 2003 withdrawing the rejection of claim 42 under 35 USC 112, second paragraph and maintaining the final rejection based on prior art.

SUMMARY OF THE INVENTION

(Reference is to the page and lines of the specification)

The invention whose claims are on appeal relates to an apparatus and method for generating and conducting a fluid flow which employs a displacement pump and a measuring arrangement, (pg. 1, lines 7 - 10). The measuring arrangement senses an actual displacement motion of the flow vessel and delivers a measurement signal representative of this motion that is particularly suited for generating a flow rate estimate representative of the instantaneous volume flow rate and/or for generating a status signal signaling a current operational status, (pg. 5, lines 20 - 26). A basic idea of the invention is to determine the displacement motion of a flow vessel, or the oscillations of its lumen, not on the basis of their causes, namely the drive motions of the

drive motor, but on the basis of their effects in the apparatus. The reactions of the apparatus to the displacement motions, which reactions have to be sensed, are, for example, a varying pressure in the fluid flow and/or a partial deformation, particularly al elastic deformation, of the support means of the displacement pump, (pg. 9, lines 4 - 12). One advantage of this arrangement is that the volume flow rate can be determined independently of its mechanical coupling provided between the drive motor and the pump drive and on the basis of a single sensor signal, (pg. 9, lines 14 - 17).

Referring to a preferred embodiment, the displacement pump shown in Figs. 2 and 3 includes a support means 11, a pump drive 12, and a flow vessel 13 of varying lumen 13A for conducting fluid, (pg 11, lines 28 - 32, to pg. 12, line 1). During operation of the apparatus, a displacement motion S_{13} of predetermined frequency, e.g., 10 Hz to 20 Hz, is imparted by pump drive 12 to flow vessel 13 such that the fluid in the oscillating lumen 13A flows in a predetermined direction, particularly in a pulsing manner. The displacement motion is a wave motion of the wall of flow vessel 13, and thus of the lumen 13A enclosed by this wall, with the wave velocity determining the volume flow rate, (pg. 12, lines 6 - 15). To produce the displacement motion S_{13}, pump drive 12 acts on flow vessel 13 with a time-variable and locally variable compression force F, particularly a periodically variable force , such that within an effective compression range, flow vessel 13, and its lumen 13A, is deformed, particularly elastically, thus displacing the fluid. The displacement 1 shown in Figs 2 and 3 accomplishes this by causing the pump drive 12 of noncircular cross section to roll on flow vessel 13, thereby periodically compressing the flow vessel 13 against support means 11 and allow it to relax, (pg. 12, lines 17 - 29).

Pump drive 12 is designed as a drum or disk shaped displacing member of non-circular cross section, i.e., a displacing member with a non-circular cylindrical surface. The displacement member has four spaced apart roller elements, which operation of displacement pump 1 act sequentially on flow vessel 13, (pg. 13, lines 1 - 70. Also included is a measuring arrangement 2 which responds to the displacement motions S_{13} performed by flow vessel 13. Measuring arrangement 2 comprises evaluation electronics 22, which are supplied with a sensor signal X_{21} representative of the displacement motion S_{13}. To generate sensor signals X_{21}, measurement arrangement 2, comprises, preferably capacitive or resistive pressure sensor 21^1, which is in contact with the fluid and which responds to an instantaneous first pressure p_1, particularly a static pressure, that exists in the fluid in lumen 13A. For this purpose, pressure sensor 21^1 has at least one pressure-measuring chamber that is isolated from lumen 13A by at least one pressure diaphragm and on which the pressure p_1 acts in operation via the at least one pressure diaphragm. (pg. 14, lines 15 - 31).

ISSUES

There are five (5) issues in this appeal:

1) Are claims 1. 3 - 7. 9. 11 - 15. 35 and 40 anticipated under 35 USC 102(b) by Nabity et al?

2) Are claims 8 and 16 unpatentable under 35 USC 103(a) over Nabity et al in view of Meijer?

3) Are claims 17 and 18 unpatentable under 35 USC 103(a) over Nabity et al?

4) Are claims 41 - 44 unpatentable under 35 USC 103(a) over Nabity et al?

5) What is the status of claims 2. 10 and 36?

GROUPING OF THE CLAIMS

Claims 1, 9, 35, 36 and 40 are in independent form, with claims 2-8, 43 and 44 dependent from claim 1, claims 10 - 18 dependent from claim 9, and claims 41 and 42 dependent from claim 40. Claims 1 - 8, 43 and 44 are drawn to an apparatus as are claims 40-42. Claims 9- 18 are drawn to a sampler including an apparatus for generating a fluid flow, and claims 35 and 36 are drawn to a method of monitoring an apparatus serving to generate a fluid flow.

ARGUMENT

(1)

CLAIMS 1, 9, 35, 36 AND 40 ARE NOT ANTICIPATED UNDER 35 USC 102(b) OVER NABITY ET AL

For a reference to anticipate a claim(s), it must disclose specifically each and every positively recited element or step in that claim(s), ***In re Bond***, 15 USPQ2d 1566 (Fed. Cir. 1990). The Federal Circuit stated in the ***Bond*** case "that every element of the claimed invention must be ***identically*** shown in a single reference." (emphasis added). Then in 1992, the Federal Circuit again stated the rule in ***Minnesota Mining & manufacturing Co. v. Johnson & Johnson Orthopedics, Inc.*** 24 USPQ2d 1321 (Fed. Cir. 1992), namely that "A party asserting that a patent claim is anticipated under 35 USC 102, must ....show that each element of the claim in issue is found.....in a single prior art reference..." For Nabity et al to anticipate claims 1, 9, 35, 36 and 40 it ***must*** specifically disclose each and every positively

recited element (claims 1, 9 and 40) and each and every positively recited step (claims 35 and 36) claimed..

Claim 1, for example, recites, among other things, that the pressure sensor senses "a static pressure in the fluid" and provides "a sensor signal representative of the displacement motions." Nabity et al ***only*** discloses a measuring arrangement (12, 14) with a piezoelectric sensor which senses ***any changes*** in strain of the flow vessel (2). If the apparatus works in steady-state and under non-disturbed conditions, these changes in strain may correspond, however, with ***any*** changes in pressure.

Since pressure pulses within the drawn fluid will be sensed by a piezoelectric sensor (14) the sensor signal does not correspond with a static or an instantaneous pressure within the fluid, but only with changes in pressure. In other words, the sensor (14) as disclosed by Nabity et al ***cannot*** sense directly any ***static and/or any instantaneous*** within the fluid and, thus, the measuring arrangement (12, 14) ***cannot*** directly measure the sample volume from the sensor signal as is the case with the present invention. To correctly measure the instantaneous pressure, the measuring arrangement (12, 14) has to integrate the sensor signal, i.e., by counting pulses in the sensor signal. In addition, this measuring arrangement (12, 14) has to monitor all parameters which could affect the "span" and "zero" of the transfer function from pressure pulses to sample volume. Such parameters may be, for instance, suction head or filing level, etc.

In contrast, such parameters used by the present invention to estimate the sample volume or to monitor the current status of the sampler could also derive directly from the sensor signal (see page 19, line 14 to page 20, line 29 of the specification - not reproduced above). This fact produces the realization that the apparatus as set-up according to the present invention

provides high accuracy in a very user-comfortable manner. Beyond that, the sensor according to the present invention provides the evaluation electronics with more direct information about instantaneous pumping states. In contrast, the evaluation electronics of Nabity et al does not and could not derive such condition information from the sensor signal.

An example of measuring a pulsative flow may be found in the field of monitoring human blood flow. If one senses a persons pulse with a finger and a watch, one does not measure the blood pressure, instead one counts the pulses to measure the heart rate. That is basically all that the measuring arrangement as disclosed by Nabity et al does. But, in order to determine any pressure values represented by the blood pressure (systole, diastole), one would have to use a stethoscope together with a pressure sleeve and not count pulses because the detected pulses do not provide any information about the static pressure within the blood circuit.

The sensor arrangement disclosed by Nabity et al clearly uses a ***strain sensing device***, which is not a presuure sensor. Pulses are measured (see col. 2, lines 30-35). Accordingly, Nabity et al cannot anticipate any of the claims on appeal.

(2)

CLAIMS 8 AND 16 ARE NOT RENDERED UNPATENTABLE UNDER 35 USC 103 (a) OVER NABITY ET AL IN VIEW OF MEIJER

The deficiencies noted above with respect to Nabity et al are not cured by the teachings found in Meijer, and since claims 8 and 16 depend from claim 1 and 9, respectively, it is respectfully submitted that the proposed combination of references still lack a teaching basis that would render claims 1 and 9 unpatentable, and likewise that would render claims 8 and 16 unpatentable

(3) and (4)

CLAIMS 17, 18 AND 41 - 44 ARE NOT RENDERED UNPATENTABLE UNDER 35 USC 103(a) OVER NABITY ET AL

For a reference to render a claim(s) unpatentable under 35 USC 103, it is necessary that it ***suggest*** those elements or steps of the claim(s) not found explicitly in the claim(s). See, ***In re Gordon***, 221 USPQ 1125 (Fed. Cir. 1984). As noted above in (1), Nabity et al lacks the teaching of a pressure sensor as claimed. And it is respectfully submitted that it also lacks a suggestion of a pressure sensor as claimed, nor could it, since the sensor disclosed by Nabity et al is different in kind from that of the present invention.

(5)

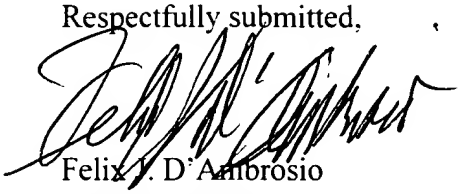
Since claims 2, 10 and 36 are not rejected under 35 USC 112, 102 or 103, it is assumed that they are allowed.

SUMMARY

Claims 1 - 18, 35, 36 and 40 - 44 are believed to be patentable over the Nabity et al reference because Nabity et al does not disclose or suggest a pressure sensor like that disclosed and claimed. Mere coincidence in general subject matter is not enough of a basis to invoke either 35 USC 102 or 35 USC 103. For 35 USC 102 to apply specific coincidence in each and every element or step is necessary, and for 35 USC 103 to apply suggestion in the reference is necessary. Neither of these standards have been met in the final rejection in this application.

The Board is urged, therefore, to reverse the examiner and find that claims 1 - 18, 35, 36 and 40 - 44 are allowed.

Respectfully submitted,



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APPENDIX

1. An apparatus for generating a fluid flow, said apparatus comprising:

- a displacement pump

-- with at least one flow vessel of deformable lumen, which serves to conduct a fluid.

-- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and

-- with a support means for holding the flow vessel; and

- a measuring arrangement responsive to the displacement motions performed by the flow vessel.

-- with a pressure sensor sensing a static pressure in the fluid and providing a sensor signal representative of the displacement motions, and

-- with evaluation electronics for the sensor signal.

2. The apparatus as claimed in claim 1, wherein the evaluation electronics are operable to derive from the sensor signal a flow rate estimate representative of an instantaneous volume flow rate of the fluid.

3. The apparatus as claimed in claim 1, wherein the evaluation electronics are operable to derive from the sensor signal a first measurement signal representative of a frequency of the displacement motions.

4. The apparatus as claimed in claim 1, wherein the evaluation electronics are operable to derive from the sensor signal a volume estimate representative of a totalized volume

of fluid delivered.

5. The apparatus as claimed in claim 1, wherein the evaluation electronics are operable to derive from the sensor signal a status signal representative of a current operational status of the displacement pump.

6. The apparatus as claimed in claim 1, wherein the evaluation electronics are operable to derive from the sensor signal a second measurement signal representative of a suction head of the apparatus.

7. The apparatus as claimed in claim 1, wherein the pump drive is a rotary pump drive.

8. The apparatus as claimed in claim 1, wherein the pump drive is a linear pump drive.

9. A sampler for taking samples of a fluid, said sampler comprising an apparatus for generating a fluid flow, said apparatus comprising:

- a displacement pump

-- with at least one flow vessel of deformable lumen, which serves to conduct a fluid,

-- with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and

-- with a support means for holding the flow vessel; and

- a measuring arrangement responsive to the displacement motions performed by the flow vessel.

-- with a pressure sensor sensing a static pressure in the fluid and providing a

sensor signal representative of the displacement motions. and

-- with evaluation electronics for the sensor signal.

10. The sampler as claimed in claim 9. wherein the evaluation electronics are operable to derive from the sensor signal a flow rate estimate representative of an instantaneous volume flow rate of the fluid.

11. The sampler as claimed in claim 9. wherein the evaluation electronics are operable to derive from the sensor signal a first measurement signal representative of a frequency of the displacement motions.

12. The sampler as claimed in claim 9. wherein the evaluation electronics are operable to derive from the sensor signal a volume estimate representative of a totalized volume of fluid delivered.

13. The sampler as claimed in claim 9. wherein the evaluation electronics are operable to derive from the sensor signal a status signal representative of a current operational status of the displacement pump.

14. The sampler as claimed in claim 9. wherein the evaluation electronics are operable to derive from the sensor signal a second measurement signal representative of a suction head of the apparatus.

15. The sampler as claimed in claim 9. wherein the pump drive is a rotary pump drive.

16. The sampler as claimed in claim 9. wherein the pump drive is a linear pump drive.

17. The sampler as claimed in claim 9. wherein said sampler is a mobile sampler.

18. The sampler as claimed in claim 9, wherein said sampler is a portable sampler.

35. A method of monitoring an apparatus serving to generate a fluid flow, the apparatus comprising: a displacement pump, with at least one flow vessel of deformable lumen, which serves to conduct a fluid, with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, with a drive motor for the pump drive, and with a support means for holding the flow vessel; and a measuring arrangement responsive to the displacement motions of the flow vessel and comprising a pressure sensor for sensing a static pressure in the fluid, said method comprising the steps of:

- causing displacement motions of the flow vessel for taking a fluid;

- sensing the pressure and generating a sensor signal representative of said displacement motions; and

- deriving from the sensor signal a status signal signaling a current operational status of the apparatus.

36. A method of monitoring a sampler with an apparatus serving to generate a fluid flow, the apparatus comprising: a displacement pump, with at least one flow vessel of deformable lumen, which serves to conduct a fluid, with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, with a drive motor for the pump drive, and with a support means for holding the flow vessel; and a measuring arrangement responsive to the displacement motions of the flow vessel and comprising a pressure sensor sensing a static pressure in the fluid, said method comprising the steps of:

- causing displacement motions of the flow vessel for taking the fluid;

- sensing the pressure and generating a sensor signal representative of said displacement motions; and

- deriving from the sensor signal a status signal signaling a current operational status of said sampler to be monitored.

40. An apparatus for generating a fluid flow, said apparatus comprising:

a displacement pump

with at least one flow vessel of deformable lumen, which serves to conduct a fluid,

with a pump drive for producing displacement motions of the flow vessel which deform the lumen and cause the fluid flow, and

with a support means for holding the flow vessel; and

a measuring arrangement responsive to the displacement motions performed by the flow vessel.

with a pressure sensor sensing an instantaneous pressure in the fluid and providing a sensor signal representative of the displacement motions, and with evaluation electronics for the sensor signal.

41. The apparatus as claimed in claim 40, wherein the pressure sensor contacts fluid within said flow vessel.

42. The apparatus as claimed in claim 40, wherein the pressure sensor senses static pressure in the fluid relative to a pressure acting on said flow vessel from outside.

43. The apparatus as claimed in claim 1, wherein the pressure sensor contacts

fluid within said flow vessel.

44. The apparatus as claimed in claim 1, wherein the pressure sensor senses said static pressure in the fluid relative to a pressure acting on said flow vessel from outside.